REMARKS

Claims 1-13 are pending in the application. Applicants amend claims 1, 5, and 9 for clarification. No new matter has been added.

Claims 1, 5, 9, and 11 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,611,872 to McCanne; and claims 2-4, 6-8, 10, and 12-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over McCanne in view of U.S. Patent No. 6,438,612 to Ylonen et al.

Regarding independent claims 1, 5, and 9:

On page 3 of the Office Action, the Examiner cited column 13, lines 24-34 of McCanne as allegedly disclosing the features of the claimed invention. Namely, the Examiner contended that "the multicast address ranges for the overlay scopes that define two TVIF's are disjoint" implies first and second relaying apparatuses, independently operable, and "C can efficiently forward traffic between the two region" as mutually connected by the public data communication network.

"The multicast address ranges for the overlay scopes that define two TVIF's are disjoint" described in McCanne indicates that in case different multicast addresses are mapped, different TVIF's will be provided.

On the other hand, "C can efficiently forward traffic between the two region" described in McCanne indicates that the router C at the border of the two different regions (public data communication networks) defined by hash functions h1 and h2 can forward packets addressed to multicast addresses h1 and h2.

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Since the Examiner has not asserted that two hash functions h1(G) and h2(G) can be used in the same region, the Examiner has apparently misinterpreted the claimed invention as merely having the virtual networks (or VPNs) mutually connected.

As described in Applicants' previous response, it is important in the present invention that there are different transformation laws *f1, f2,*...(not hash function) per VPN within the same network (public data communication network), so that packets of the same address handled by different virtual relaying structures (virtual routers) are delivered to different destinations if the VPN's are different.

Namely in the present invention, for the packet received by the router, the VPN is determined by the receiving interface (IF) associated with the virtual router distinguished by the VPN identifier, and the packet is transferred to the VPN distinguished by the multicast address associated with the VPN identifier. Therefore, even if the addresses of the packets are the same, their transfer destinations are different if received by interfaces of different VPN identifiers.

However, in the system described in McCanne, the native multicast group address is a function h(G) depending on the overlay group address G, so that packets addressed to the address G received by any interface of the overlay router are all mapped to the same TVIF or destination.

Accordingly, it is respectfully submitted that in the present invention, a VPN is composed of virtual relaying structures (indicated as virtual routers in Fig. 1), virtual interfaces, and virtual links between the virtual relaying structures, different from the system described in McCanne.

Advantage of the present invention over the prior art

Since the VPN's are separated, the present invention enables communication to designated destinations within a VPN by using any destination addresses within the VPN.

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The VPN's of the present invention prepared using multicast addresses are associated with VPN identifiers, so that packets of the same destination address received by the router from the user network and handled by different interfaces associated with the VPN's are mapped to the different VPN's regardless of the packet address.

In the present invention, since the address space to be overlayed can be defined in plurality, and the VPN identifiers are respectively associated with the address spaces, it is possible to use duplicated addresses in different address spaces. Even if the addresses are duplicated, they are mapped to different VPN's, so that packets will not mix within the public data communication network.

However, in the system described in McCanne, since the overlay router obtains the native multicast address from the result obtained by assigning the overlay group address to the hash function, the overlay router can handle only one address space.

In other words, McCanne, as cited and relied upon by the Examiner, fails to disclose,

> "[a] virtual network construction method for a public data communication network comprising the steps of:
> generating and multicasting control packets each having set a multicast address predetermined per virtual network in first relaying apparatuses originating a virtual network within the public data communication network, and
> establishing virtual links to the first relaying apparatuses which are transmitting sources of the control packets upon receipt thereof and returning reply packets through the virtual links in second relaying apparatuses belonging to a multicast address group represented by the multicast address,
> whereby the virtual links are established between all pairs of virtual relaying structures independently operable per virtual network in the first and the second relaying apparatuses to construct the virtual network that is preliminarily associated with the virtual relaying structures, the virtual relaying structures being provided with receiving virtual interfaces and belonging to the multicast address group," as recited in claim 1. (Emphasis added)

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Accordingly, Applicants respectfully submit that claim 1 is patentable over <u>McCanne</u> for at least the foregoing reasons. Claims 5 and 9 incorporate features that correspond to those of claim 1 cited above, and are, therefore, together with claim 11 dependent from claim 9, patentable over <u>McCanne</u> for at least the same reasons. The Examiner cited and applied <u>Ylonen</u> <u>et al.</u> specifically to address the additional features recited in rejected dependent claims 2-4, 6-8, 10, and 12-13. Thus, a combination with this reference would still have failed to cure the above-described deficiencies of <u>McCanne</u>, even assuming, <u>arguendo</u>, that such a combination would have been obvious to one skilled in the art at the time the claimed invention was made. Accordingly, Applicants respectfully submit that claims 2-4, 6-8, 10, and 12-13 are patentable over the cited references at least for the above-stated reasons with respect to claims 1, 5, and 9, from which they depend, respectively.

Applicants appreciate the Examiner's implicit finding that the additional references made of record, but not applied, do not render the claims of the present application unpatentable, whether these references are considered alone or in combination with others.

In view of the remarks set forth above, this application is in condition for allowance which action is respectfully requested. However, if for any reason the Examiner should consider this application not to be in condition for allowance, the Examiner is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.
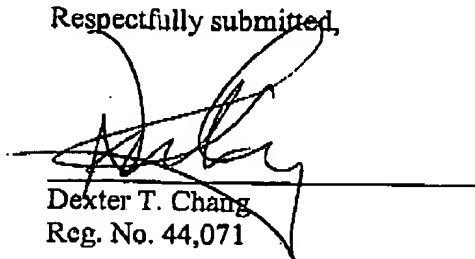
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Respectfully submitted,

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